



THE OHIO STATE
UNIVERSITY

EXTENSION

extension.osu.edu

agmr.osu.edu

Growing Hardy Figs in Ohio

HYG-1439

Agriculture and Natural Resources

Date: 05/28/2020

M. Ryan Slaughter, Research Assistant II, OSU South Centers, The Ohio State University

Dr. Gary Y. Gao, Professor and Extension Specialist, OSU South Centers, Department of Extension; and Courtesy Professor, Department of Horticulture and Crop Science, The Ohio State University

Bradford Sherman, Program Assistant, OSU South Centers, The Ohio State University

The fig (*Ficus carica* L.) has been grown as a fruit crop for many centuries and is even considered an ancient fruit (Stover et al., 2007).

Many people all over the world have enjoyed the edible fig; with Turkey, Egypt, Morocco, Iran, Algeria, Greece, Syria, the United States, Spain, and Tunisia topping the list of fig-producing nations (Oberheuer, 2018).

While it is encouraging to see fresh figs available for sale at some grocery stores in the United States, Americans are more familiar with fig cookie than fresh figs. In the United States, fig production is concentrated in California since most edible fig cultivars are not cold hardy and can be killed to the ground when temperatures are 20°F or below.

In an effort to test how hardy figs will perform in Ohio, two demonstration plantings (one in the open field and one in a high tunnel) of several hardy fig cultivars were installed at The Ohio State University South Centers near Piketon, Ohio (Figure 1) as part of a 2017 Specialty Crop Block Grant from the U.S. Department of Agriculture through the Ohio Department of Agriculture. The information presented in this fact sheet summarizes the data collected from those plantings from 2017 to 2020. When considering a commercial fig planting in



Figure 1. Fresh Brown Turkey figs from trials at OSU South Centers near Piketon, Ohio are delightful to eat. Photo by

Ohio, you should exercise caution, since this study was short-term and a comprehensive marketing study was not performed. Gary Gao, The Ohio State University.

Home gardeners may still use the information included in this fact sheet as a guide. Suggested cold hardy cultivars can still be planted since these hardy figs can produce fruits on new shoots. Gardeners should keep in mind that a large percentage of the fruits may not fully ripen at the end of the growing season. The fig plants still look very interesting and make a good addition to the home landscape.

Hardy Figs as a Commercial Crop in Ohio

Test a small planting first to check their productivity and the market demand. A high tunnel is highly recommended to produce an earlier harvest and extend the growing season into autumn (Figure 2). In 2019, the fruits on the hardy fig plants in trials near Piketon, Ohio began ripening around early-September and kept ripening up into November in a high tunnel. Hardy figs produce more fruits, an earlier harvest and a longer harvest in a high tunnel production. Hence, high tunnel production of hardy figs is highly recommended. Growers need to weigh the high costs of high tunnels since we did not conduct a cost benefit analysis of the high tunnel system.



Figure 2. Hardy figs in a high tunnel at OSU South Centers near Piketon, Ohio. Photo by Gary Gao, The Ohio State University.

The fruits on the fig plants grown in the open field without protection from the high tunnel started ripening around early October and continued until mid-October in 2019. Fruit growth slowed down when the weather cooled and stopped October 18 and 19 when air temperatures were, 32°F and 31.6°F, respectively. Fig plants shed their leaves after a hard freeze on November 1, 2019. These unripe fruits shriveled afterward. Hence, we do not recommend the open field production of hardy fig in Ohio due to significant loss of fruit yield.

Cultivar Selection

There are hundreds of fig cultivars available in the commercial trade, but most of them are not well suited for Ohio due to their lack of cold hardiness, long fruit ripening cycle, and unique pollination requirements. Brown Turkey and Hardy Chicago are the only two suggested cultivars since our preliminary experience with them was positive.

BROWN TURKEY

This cultivar has shown promise in growing and producing well in the trials at OSU South Centers (Figure 3). Although Brown Turkey can produce two distinct crops in a long, warm growing season (Frecon and Ward, 2012), that is unlikely to occur in Ohio. When grown under a high tunnel, fruits of this cultivar are likely to ripen beginning in mid- to late-September and continue until a killing freeze occurs. When grown outside without protection, Brown Turkey may prove to be a challenge because fruits may not fully ripen until early October. Its fresh fruits are very large and flavorful, with an average size of approximately 40 grams in trials at Piketon.



Figure 3. Ripening Brown Turkey fig fruit. Photo by Gary Gao, The Ohio State University.

Potential hardy fig growers in Ohio should exercise caution when purchasing *Brown Turkey* figs plants from a nursery. Some Californian Brown Turkeys may not be the same hardy Brown Turkey figs. This confusion was first mentioned in a North Carolina State publication in 1986 (Williams, 1986) and may still exist. Growers should trial a small number of plants to make sure they get the true hardy version of Brown Turkey before purchasing a larger number of plants.

HARDY CHICAGO

This cultivar is likely more suitable for Ohio growing conditions, although its fruits are much smaller than those of Brown Turkey, averaging only 18 grams per fig at maturity (Figure 4). Under average outside growing conditions, they ripen approximately three weeks before Brown Turkey. In Southern Ohio, you can expect to harvest fruits from this cultivar beginning in early- to mid-September until a killing freeze occurs. Like Brown Turkey, a high tunnel can help ripen the fruit sooner for an earlier harvest, and protect the developing fruits for higher yields and a later harvest. The flavor of Hardy Chicago is exceptional and has a resemblance to a peach.

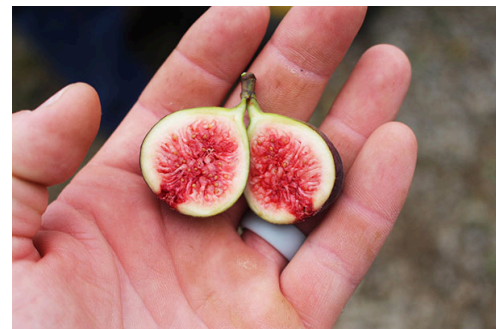


Figure 4. Shown here is a Hardy Chicago fruit cut in half. Photo by Ryan Slaughter, The Ohio State University.

Other cultivars in our trial at OSU South Centers in Piketon included Celeste, Fantasia, Hunt, Latizia, Lola Martin, Olympian, Violette de Bordeaux and White Marseilles. As of

March 2020, not enough data has been collected in order to make recommendations on them.

Pollination Requirements

Figs can be one of three types: Common, San Pedro, or Smyrna (Ernst, 2018). Fig cultivars of the common type, such as Brown Turkey and Hardy Chicago, do not require pollination to produce fruits. They produce fruits through parthenocarpy, which is a process where plants set fruits from unfertilized ovules. They do not contain seeds, but rather partially developed ovules. Fig cultivars of the San Pedro and Smyrna types are not recommended for Ohio, as the wasp needed for pollination does not survive the cold winters in Ohio.

Soil and Site Requirements

Fig plants develop extensive, relatively shallow fibrous root systems and should not be planted near drainpipes, sewer lines or other underground infrastructure potentially affected by invasive roots (Ernst, 2018). They prefer soils that are slightly acidic (pH of 6.0 to 6.5), loamy, well drained, and high in organic matter (Williams, 1986). In trials at Piketon, raised beds were formed to allow better drainage and landscape fabric was placed over them for weed control (Figure 5). Figs require full sun for optimum production.

The optimum spacing for fig plants in Ohio remains unknown. The spacing in trials at Piketon was 4 feet between plants and 6 feet between rows, in order to maximize the space usage in the high tunnel. Our experience showed that a 4-foot x 6-foot spacing was too close; a plant spacing of 5 to 6 feet may be better. Row spacing may need to be set at 8 foot to 10 foot for passage of machinery.

Since new shoots come from the base of the plant for fruit production, the fig plants develop into multi-stemmed shrubs. Since fig stems are quite pithy in the middle, they do not overwinter well. All stems were cut to the ground, even those plants inside a high tunnel.



Figure 5. Fig planted should be planted on raised beds lined with landscape fabric. Photo by Gary Gao, The Ohio State University.

Common Diseases and Insects

Several diseases and insects have been found on common figs in other parts of United States (Stover et al., 2007), and these can be very region dependent. Since hardy fig is a new crop in Ohio, it is difficult to say which diseases and insects will be prevalent. So far, we have observed tiny brown spots on leaves (Figure 6). The symptoms resemble those of fig rust, but a positive identification is still needed.

Alternaria and *Fusarium* are two fungal diseases that have shown to cause internal fruit rot in California, while fig mosaic disease (FMD) is a viral disease that produces yellow rings on leaves and sometimes symptoms on fruit and is more of a worldwide concern. (Stover et al., 2007). No specific insect pests have been observed to feed on fig plants in trials at Piketon.

Scale insects were noted by Dr. John Strang of University of Kentucky on a potted Celeste plant that was overwintered in a garage in Lexington, Kentucky (Figure 7). These were controlled with a summer oil spray. Ants and birds (Figure 8) may also be a problem when they feed on the ripe figs.



Figure 6. Symptoms of possible fig rust on fig leaves in our trial. Photo by Gary Gao, The Ohio State University.



Figure 7. Scale insects on a fig plant. Photo courtesy of Dr. John Strang of the University of Kentucky.



Figure 8. Bird damage to Celeste fig fruit. Photo courtesy of Dr. John Strang of the University of Kentucky.

Since figs are a new and minor crop in Ohio, limited information is available on the labeled insecticides, fungicides, and herbicides. Hence, organic production methods may need to be adopted out of necessity.

Harvest and Storage

For optimum flavor and sugar content, figs are harvested when the fruit stem becomes less rigid and the fruit droops down slightly. Fresh mature figs are tender, bruise easily and have a short storage life. Consequently, fruit should be handled carefully, kept dry, and marketed in shallow containers promptly. The optimum storage temperature for figs is 30-32°F and at 90-95% relative humidity (Crisosto, Mitcham, and Kader, 1998). Fruit softening and decay are accentuated at temperatures above 41°F.

Hardy Figs Grown in Ohio for Profit?

There is a big difference between being able to grow hardy figs in Ohio and making money from it. Since a majority of the fruits ripen from September to November, growing in a high tunnel is highly recommended for growing hardy figs for profit in Southern Ohio. Potential growers in central and northern Ohio will need to be even more cautious when considering a fig planting since our observations are from Southern Ohio. The total amount of ripe figs per plant ranged from 2 to 5 pounds per plant during the first three years inside the high tunnel while that amount was about 1 pound outside the high tunnel. Without protection from a high tunnel, a large percentage of fig fruits will fail to ripen once cold temperatures arrive (Figure 9). We do not have accurate economic data on hardy fig production due to funding limitations and a short project period. Based on the information from the University of Kentucky, 10 pounds of hardy figs will need to be produced per plant and sold for at least \$3 per pound for growers to turn a profit (Ernst, 2018).



Figure 9. Fig fruits that fail to ripen around late autumn due to low temperatures. Photo by Gary Gao, The Ohio State University.

Authors have seen fresh figs being sold for about \$1 per fig at specialty foods or ethnic grocery stores. Most people who tried hardy figs for the first time at our research center really liked them. However, growers are encouraged to only plant a small number of hardy fig plants and gather their own production and marketing data before installing a larger planting of hardy figs.

References and Resources

Crisosto, C.H., E. J. Mitcham, and Adel A. Kader. 1998. Recommendations for Maintaining Postharvest Quality.

Ernst, M. (2018). Figs. CCD-CP-135. Lexington, KY: Center for Crop Diversification, University of Kentucky College of Agriculture, Food and Environment. Retrieved from [uky.edu/ccd/sites/www.uky.edu/ccd/files/figs.pdf](http://www.uky.edu/ccd/sites/www.uky.edu/ccd/files/figs.pdf)

Frecon, J., and D. Ward. 2012. Figs in the Home Garden. Rutgers University Fact Sheet FS1198. Retrieved from njaes.rutgers.edu/FS1198/

Louisiana State University. Figs for Commercial and Home Production in Louisiana. Retrieved from lsuagcenter.com/NR/rdonlyres/DF265B8B-0138-4ECE-A802-632290253E87/38103/public1529Figs.pdf

Oberheu, C. "Where are Figs Grown?" WorldAtlas, Jun. 1, 2018. Retrieved from worldatlas.com/articles/top-fig-growing-countries.html

Pacific Pests and Pathogen. 2017. Fig Rusts. Retrieved from pestnet.org/fact_sheets/fig_rust_307.htm

Stover, E.W., Aradhya, M., Ferguson, L., & C.H. Crisosto. 2007. The Fig: Overview of an Ancient Fruit. HortScience 42(5):1083-1087. <https://doi.org/10.21273/HORTSCI.42.5.1083>

Williams, K.M. 1986. Fig Culture in North Carolina. North Carolina State University and North Carolina Agricultural Extension Service Bulletin #AG-109. It is currently out of print, but can be retrieved from burke.ces.ncsu.edu/wp-content/uploads/2015/01/fig-culture-in-north-carolina.pdf?fwd=no

Acknowledgments

The project members would like to thank Ms. Lori Panda, formerly senior program manager for the Ohio Department of Agriculture (ODA), ODA and USDA for a 2017 Ohio Specialty Crop Block Grant. Authors extend our sincere appreciation to Dr. Bruce Bordelon of Purdue University, Dr. John Strang of University of Kentucky, and Mr. Patrick Byers of University of Missouri for reviewing this fact sheet. We also thank Dr. John Strang for providing two photos in this fact sheet.

Originally posted May 28, 2020.

